

## INTRODUCTION.

The great majority of the American species of those familiar creatures commonly known as "harvest-men" or "daddy-long-legs" (not to be confounded with the crane-flies—*Tipulidae*—which go by the latter name in Europe) belong to the subfamily *Phalangiinae* of the family *Phalangidae* of the suborder *Opilonea* and order *Arthrogastra*. Though abundant and widely distributed, these arachnids have as yet received comparatively little attention in this country. The first American descriptions were published by Thomas Say in 1821 (*Jour. Phil. Acad. Nat. Sci.*, Vol. II., pp. 65-68), when four species were characterized under the genus *Phalangium*. Besides the above the only descriptive paper that has appeared is that by Dr. Horatio C. Wood, Jr., entitled "On the Phalangeæ of the United States of America," which was published in 1868 in the *Communications of the Essex Institute* (Vol. VI., pp. 10-40). In 1885, Prof. L. M. Underwood published a list of the described species (*Canadian Entomologist*, Vol. XVI., pp. 167-169), but added nothing to our knowledge of the group. Finally, in the "*American Naturalist*" for October, 1887 (Vol. XXI., p. 935), the present writer published a brief note calling attention to the proper generic position of several species hitherto retained in the old genus *Phalangium*.

In the present paper I have followed, in a general way, the classification adopted by Simon in his admirable monograph *Les Arachnides de France* (Vol. VII.), and my characterizations of genera are little more than translations from this author. For an elaborate discussion of the anatomy and relations of the group, I must refer the reader to the above monograph and other general works on the subject.

The Laboratory collections on which this paper is based, have largely been made within the last two years, and represent

the phalangid fauna of the northern, central, and southern portions of Illinois. I have also received, through the kindness of my brother, Mr. Howard E. Weed, a fine series of certain species from Lansing, Michigan; and from Mr. T. P. Carter, a number of specimens collected at Jacksonville, Ill. I am, further, under special obligations to Mr. Chas. W. Woodworth, who has verified my determinations of several of Wood's species by comparison with the types in the Museum of Comparative Zoölogy at Cambridge; and have to thank Professors Forbes and Garman and Mr. Chas. A. Hart for many favors.

The Phalanginæ are found abundantly from midsummer until late in autumn in the fields and woods, especially about rocky ledges, and in the vicinity of barns and out-houses. They ordinarily hide during the day, but at twilight wander about in search of food. Until quite recently it has generally been supposed that they captured and ate living insects; but Dr. H. Henking, of Germany, has shown\* that they prefer dead insects, and seldom, if ever, attack living ones. The females of most species deposit spherical white eggs in the ground in autumn, and the adults ordinarily do not survive the winter. One species (*Liobunum* (?) *formosum*), however, seems to be an exception to this rule, as I have found the adults abundant during the early spring months.

The harvest-men are easily collected and preserved in alcohol for study or exhibition. As the genital organs are frequently of great value in determining species, it is well to preserve them exposed — a simple operation, requiring only that the abdomen of the living specimen be compressed between the thumb and finger, when these organs will be extruded, and if the specimen is immediately dropped into alcohol will ordinarily remain exposed.

CHAMPAIGN, ILL., Nov. 22, 1887.

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\* Zeitschrift für Wissenschaftliche Zoologie, Vol. XLV., p. 87.

## SUBFAMILY PHALANGIINÆ.

Arachnids having the body composed of a single piece with long slender legs. Teguments not coriaceous. Segments only indicated by striæ, which are often obsolete. Five ventral segments. A single anal piece. Two lateral pores easily seen. Stigmata visible. Maxillary lobe of palpus with two tubercles. Epistoma in the form of a triangular plate.

The three genera that have been recognized in Illinois may be distinguished as follows :

- I. First joint of mandibles with a tooth on ventral surface near base.
  - A. Maxillary lobes of second pair of feet, with a large base, impressed, straight and elongated, not attenuate, but rather a little enlarged from the base to the apex and very obtuse ; claw of palpus denticulate ..... *Liobunum*.
  - B. Maxillary lobes of second pair of feet forming elongated triangles, quite large at the base, then gradually retracted, not impressed, with anterior border straight ; claw of palpus not denticulate ..... *Oligolophus*.
- II. First joint of mandibles without tooth ..... *Phalangium*.

## LIOBUNUM, C. KOCH, 1839.

Teguments soft or subcoriaceous. Striæ of the cephalothorax and of the three last abdominal segments very distinct ; those of the anterior segments scarcely or not at all distinct (especially in the ♂). Anterior and lateral borders of the cephalothorax smooth. Eye eminence relatively small ; smooth or, rarely, provided with small, slightly distinct, tubercles ; widely separated from the cephalic border. Lateral pores small, oval, and marginal. Anal piece large, transverse-oval or semicircular, much wider than long, and much wider than the reflected borders of the eighth segment. Mandibles short, similar in the two sexes ; first joint furnished at the base below with an acute tooth. Palpi simple ; femur, patella, and tibia

without any process and without projecting angles; maxillary lobe provided at the base with two strong, conical teeth. Maxillary lobe of the second pair of feet very long, nearly straight from the base, not attenuated, directed mesad nearly horizontally, and united on the ventro-meson to the lobe from the opposite side without forming a sensible angle; the two together lightly arched on the cephalic border, and forming an even curve. Sternal piece large, slightly contracted between the fourth pair of coxæ, gradually enlarging and obtusely truncate cephalad. Feet very long and slender; tibia of the second pair with a few false articulations. Palpal claw denticulate.

The following synopsis will aid in distinguishing our Illinois species:

1. *L. dorsatum*. Dorsum grayish or reddish brown, with distinct central dark marking. Palpi long, reddish brown. Body of ♂ 5 mm. long; second legs 50 mm. Northward.

2. *L. vittatum*. Much like *dorsatum*, but body is larger and legs are much longer. Body of ♂ 7 mm. long; second legs 90 mm.

3. *L. nigropalpi*. Dorsum reddish brown, with central marking subobsolete. Middle joints of palpi blackish. Body small; legs very long. Body of ♂ 4 mm. long; second legs 100 mm.

4. *L. verrucosum*. Dorsum reddish, with subobsolete central marking. Palpi brownish white. Body large, with legs comparatively short and thick. Body of ♂ 6.5 mm. long; second legs 50 mm.

5. *L. elegans*. Dorsum blackish on margins, brownish in middle, with a faint indication of a central marking. Palpi light brown. Very small, with long, slender legs. Body of ♂ 3.2 mm. long; second legs 38 mm.

6. *L. politus*. Dorsum and trochanters clear reddish brown, with scarcely an indication of a central marking. Body of ♂ 5 mm. long; second legs 51 mm.

7. *L. (?) calcar*. Dorsum reddish brown, with faint central marking. Femur of palpus, with a robust spur-like process on its outer ventro-lateral surface. Body of ♂ 7.5 mm. long; second legs 40 mm.

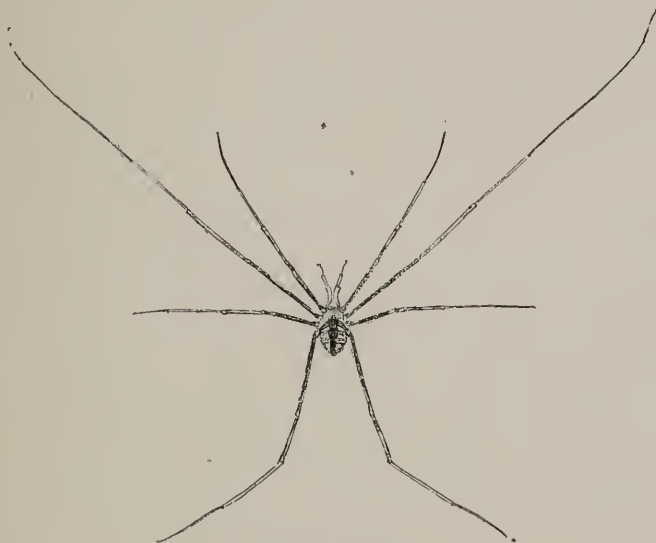
8. *L. (?) formosum*. Dorsum very smooth, blackish. Patella of palpus with its inner distal lateral angle prolonged into a short apophysis, with a thin brush of hairs on its lateral surface. Body 5 mm. long; second legs 22 mm.

**L. dorsatum, (Say).**

*Phalangium dorsatum*, Say, Jour. Phil. Acad. Nat. Sci., Vol. II., p. 66.

————— Wood, Commun. Es ex Inst., Vol. VI., p. 18.

♂. Body 5 mm. long, 3.5 mm. wide. Palpi 7 mm. long. Legs: I., 27 mm.; II., 50 mm.; III., 27 mm.; IV., 36 mm.



LIOBUNUM DORSATUM. ♂

Dorsum granulate, varying from a light grayish-brown to a deep reddish-brown, often of an intermediate, somewhat golden, tint. A well marked dark stripe begins at the eye eminence, expands for a short distance, then contracts until it reaches the cephalic portion of the abdomen, whence it runs with parallel sides a short distance, then very slightly expands until it reaches the caudal third of the abdomen, where it contracts and runs as a stripe to the anus. Cephalothorax with an irregular parallelogrammic dark V-shaped marking cephalad of the eye

eminence, sometimes obsolete, especially in older specimens. In some individuals there is so much black cephalad of the eye eminence that the central marking appears to begin on the cephalic margin of the cephalothorax. Eye eminence of about equal height, length, and breadth, sloping slightly backward, dark above, canaliculate, with a few (two to five or six) sub-obsolete acute blackish tubercles. Mandibles very light brown, tips of claws black; dorsal surface of second joint sparsely covered with short spinous hairs. Palpi long, reddish brown, depth of color varying with the rest of the body. Femur with a row of short conical tubercles on its outer ventro-lateral surface, commencing near the base and running to the apical extremity, where there are about a dozen similar tubercles on the ventral surface; another short, slightly oblique series on the dorsal surface, beginning at the apical margin and extending distally about one fourth the length of the femur. Patella with a row of tubercles on its outer ventro-lateral surface, similar to those on the femur, and a few subobsolete ones on its dorsal and ventral surfaces. Tibia with two nearly parallel rows of tubercles, one on the ventral and the other on the outer ventro-lateral surface; a short row also on the distal portion of its inner ventro-lateral surface. Tarsus sparsely covered with stiff hairs, and furnished with a well pronounced row of dark tubercles on its inner ventro-lateral surface. Ventrum varies from whitish to dark reddish-brown, with well marked granulations in older specimens. Coxæ slightly tuberculate, each having a row of short tubercles on the cephalic margin. Legs varying from light grayish-brown to black, with darker annulations. Shaft of penis slender, distally bent nearly at right angles, and terminating in a very acute point.

♀. Body 5-7 mm. long, 3.5-4.5 mm. wide. Palpi 5 mm. long.

Legs: I., 27-30 mm.; II., 50-61 mm.; III., 28-31 mm.; IV., 40-44 mm.

Differs from male as follows:

Body much thicker and more rounded. Color generally darker with much less reddish. Legs brownish rather than black. Palpi very much more slender, shorter, and having the



tubercles partially replaced by hairs. Apical portion of ovipositor white, with no dark rings.

Described from many specimens. Collected by the hundred in Champaign county at all times between the latter part of June and early in November. Also taken at various dates late in summer and throughout the fall in Edwards, Kankakee, Lake, La Salle, McLean, and Morgan counties, in Illinois, and received from Lansing, Michigan.

This is by far the commonest species throughout the northern portion of the State. It develops largely in the fields and woods, and, when full grown, apparently migrates to the vicinity of houses, barns, and out-buildings, where it sometimes congregates in great numbers. I have found the young ones very common in corn fields, among the leaves of the growing plants, where I suspect they live upon the numerous small insects drowned in the moisture contained in the bases of the unfolding leaves. They become mature in June.

I was at first much puzzled over this species because of the great variation in the color of different specimens, and was inclined to separate the series then at hand into two species. Being able to find, however, no structural difference, and noticing that the deeply colored specimens were the only ones obtained late in autumn, and, also, that the light ones were only taken early in the season (*i. e.*, soon after they became adults), it occurred to me that the color might vary with the age of the individual. After examining hundreds of specimens collected at various times between July and November, I became convinced that such was the case, and the field observations of the present season have verified the conclusion.

# **L. vittatum, (Say).**

*Phalangium vittatum*, Say, Jour. Phil. Acad. Nat. Sci., Vol. II., p. 65.

————— Wood, Commun. Essex Inst., Vol. VI., p. 20.

♂. Body 7 mm. long, 4 mm. wide. Palpi 7 mm. long. Legs : I., 44 mm ; II., 89 mm.; III., 45 mm.; IV., 64 mm.

Dorsum reddish brown, with a central dark marking commencing at the eye eminence and extending caudad to the

ultimate or penultimate segment, slightly contracting near cephalic margin of abdomen, then gradually expanding until about the beginning of the caudal third of the abdomen, where it again slightly contracts. Ventrum slightly paler than dorsum; both finely granulate and entirely glabrous. Eye eminence slightly wider than high, black above, canaliculate, with small black tubercles over the eyes. Mandibles light yellowish-brown, tips of claws black; second joint with short, sparse hairs. Palpi long, reddish brown; tarsal joints paler. Femur and patella curved, with two rows of rather blunt, dark tubercles on the outer ventro-lateral surface; femur also having a few small subobsolete ones on its dorsal surface. Tibia with a similar row on its outer ventro-lateral surface, a short row on the distal portion of its inner ventro-lateral surface, and a short row on the proximal portion of its ventral surface. Tarsus pubescent, with a row of short, blunt, black tubercles on the inner ventro-lateral surface, extending from the base to near the apex. Legs light brown or black, patella generally black and tarsi brown, the other joints varying from one color to the other. Coxæ reddish brown, minutely tuberculate. Trochanters generally dark brown, with minute scattered tubercles. Femora and patellæ with fine spinose tubercles. Tibiæ with very short hairs. Shaft of penis slender, subcylindrical, not broadened distally, bent at an obtuse angle and terminating in a very acute point.

♀. Body 8-9 mm. long, 5-6 mm. wide. Palpi 5 mm. long. Legs: I., 42 mm.; II., 90 mm.; III., 43 mm.; IV., 61 mm.

Besides its rounder body and much more robust appearance, it differs from the male as follows:

Dorsum of a much darker shade of brown, with less of the reddish tint, and ventrum paler. Second joint of mandibles with fewer hairs. Palpi shorter, more slender, with the rows of tubercles on the tibia subobsolete, and that on the tarsus entirely wanting. Legs generally light brown, with black annulations at the articulations. Ovipositor white, with no color in the apical rings.

Described from many specimens collected in Union Co., Ill., September 25th, 1886. It has also been obtained in Johnson Co., Ill., and at East Cairo, Ky.



This species is very abundant on the rocky ledges of certain parts of southern Illinois, being, in fact, the commonest harvest-man in the region, apparently replacing *P. dorsatum*. On the farm of Mr. Parker Earle, at Cobden, I obtained a long series of both sexes, the creatures being everywhere abundant about the rocky bluffs running across the place.

Dr. Wood has shown that *L. vittatum* and *L. dorsatum* are very closely allied and difficult to separate. According to him, the former may be looked upon as the southern representative of the latter, of which he had never seen any specimens from farther south than Washington, D. C. After examining hundreds of specimens of *dorsatum* and dozens of *vittatum*, I am unable to find any constant structural character by which they may be separated, though the difference in the size of the body and length of legs is very marked. I have only collected the latter species late in the season when the individuals were fully colored, but from some alcoholics collected earlier, I judge that it undergoes the same color changes as *dorsatum*.

### *L. nigropalpi*, (Wood).

*Phalangium nigropalpi*, Wood, l. c., p. 22.

♂. Body 4 mm. long, 3 mm. wide. Palpi 4 mm. long. Legs: I., 49 mm.; II., 99 mm.; III., 50 mm.; IV., 67 mm.

Dorsum minutely tuberculate, reddish brown, with a subobsolete dark central marking, sometimes simply represented by obscure dark blotches. Eye eminence at least as broad as high, black above, canaliculate, with small black tubercles on the carinæ. Mandibles light yellowish-brown, tips of claws black; second joint with sparse hairs. Palpi slender, light brown, distal portion of femur, and almost all of patella, black; femur, patella, and tibia with small scattered tubercles, and short hairs; tarsus pubescent, with a row of subobsolete, small, black tubercles on its inner ventro-lateral surface. Ventrums paler than dorsum, of a nearly uniform tint. Coxæ minutely tuberculate, of same color as ventrum. Trochanters black. Legs very long, slender, black, with white annulations at distal extremities of femur and tibia, especially in the second and fourth pairs. Shaft of penis flattened, contracted near its distal extremity, and bent upwards, terminating in an acute point.

Described from many specimens collected at Cobden, Union Co., Ill., 25th September, 1886. We have also specimens from Johnson county.

The males of this species are much more numerous than the females. Out of a large number of specimens collected, I was surprised not to find a single female. Wood states that he found six times as many males as females. According to him, "The females are to be distinguished by their larger size, the brown color of their legs and palpi, as well as the darker and less uniform color of the dorsum, which also frequently loses almost all of the reddish tint."

This species is chiefly remarkable for the enormous length of its legs. Though the body is very small, the legs are immensely developed. Like *L. vittatum*, this harvest-man frequents the rocky ledges of southern Illinois, where it is quite abundant. I have never taken it anywhere else.

***L. verrucosum*, (Wood).**

*Phalangium verrucosum*, Wood, l. c., p. 29.

♂. Body 6.5 mm. long, 4 mm. wide. Palpi 4.5 mm. Legs: I., 27 mm.; II., 50 mm.; III., 28 mm.; IV., 39 mm.

Dorsum minutely tuberculate (almost appearing finely granulate), of a rich dark golden-brown color, somewhat darker in front, with a faint indication of a dark central marking in some specimens. Eye eminence well pronounced, longer than high, black above, scarcely at all canaliculate, with two rows of small black tubercles, frequently subobsolete. Mandibles light brown, tips of claws black; second article with sparse dark hairs. Palpi slender, grayish or brownish in some specimens, with more or less black on basal joints. Femur with short, scattered hairs; ventral surface beset with well-developed black tubercles. Patella curved, with short hairs and small black tubercles. Tibia and tarsus thickly beset with short hairs; without tubercles, except a subobsolete row on the inner ventro-lateral surface of tarsus. Ventrum grayish brown, cephalic portion tuberculate. Legs dark brown or black. Trochanters tuberculate. Femora, patellæ, and tibiæ, with rows of small spines. Shaft of penis straight, except at tip, broad, flat; about two thirds of the way from the base to

the apex expanding into an alate portion, which continues for about one fifth the entire length of the shaft, then suddenly contracting into a rather robust, curved, canaliculate end, and terminating in an acute point; with two curved spinous hairs just behind the base of the jointed tip.

Described from several specimens collected in Champaign Co., Ill., 23d to 26th June, and 8th July, 1887.

*L. elegans*, sp. n.

♂. Body 3.2 mm. long, 2.1 mm. wide. Palpi 2.1 mm. long. Legs: I., 19 mm.; II., 38 mm.; III., 20 mm.; IV., 29 mm.

Dorsum blackish at the margins, especially on the abdomen, and light brownish in the middle, with a faint indication of a central marking. Finely granulate, with numerous very small black tubercles scattered in patches over the surface, and a transverse row of larger whitish tubercles on each abdominal segment. Eye eminence prominent; light brown, darker above; canaliculate, with two rows of well developed tubercles, having whitish bases and black tips. Mandibles whitish, tips of claws black. Palpi slender, light brown. Femur, patella, and tibia, with distant, short, spinose tubercles. Tarsus with whitish hairs. Ventrums whitish brown, with a transverse row of tubercles on each abdominal segment, and the pectus and coxae closely tuberculate. Legs very slender, proximal portions light brown, distally darker. Femora furnished with minute blackish spines.

Described from two specimens collected in Champaign Co., Ill., during the autumn of 1886.

*L. politus*, sp. n.

♂. Body 5 mm., long, 2.8 mm. wide. Palpi 3.5 mm. long. Legs: I., 25 mm.; II., 51 mm.; III., 26 mm.; IV., 36 mm.

Dorsum smooth, finely granulate; clear reddish brown, with no marking and only a faint indication (shown by a slightly dark shade) of the usual central marking. Eye eminence rather prominent, black above, canaliculate, with a regular curved series of small, acute, black spines over each eye. Mandibles whitish, with tips of claws black. Palpi slender, whitish, with

femur and patella dusky; finely pubescent, with a subobsolete row of minute dark tubercles on the inner ventro-lateral surface of femur, and another row on the inner ventro-lateral surface of tarsus. Ventrum reddish brown. Coxæ, including the membranous distal lateral tips, reddish. Trochanters brownish red. Proximal portions of legs light brown, darker distally. Shaft of penis nearly straight, slender, flattened, canaliculate, distal portion very slightly expanded, then slightly contracted, and again expanded in a half spoon-shaped portion, and terminating in a small, acute point.

Described from three specimens collected about a shed, Champaign Co., Ill., 25th July and 9th August, 1887.

L. (?) *calcar*, (Wood).<sup>3</sup>

*Phalangium calcar*, Wood, l. c., p. 26.

♂. Body 7.5 mm. long, 4.5 mm. wide. Legs: I., 21 mm.; II., 40 mm.; III., 22 mm.; IV., 32 mm.

Dorsum reddish brown, minutely tuberculate, tubercles blackish, some specimens having a faint indication of a central marking, and scattered light-colored spots. Eye eminence of moderate size, of nearly equal height, length, and breadth; black above; scarcely at all canaliculate; with two rows of small acute tubercles. Mandibles brownish white, with obscure markings of a darker color, especially on the inner dorso-lateral surface of the second joint, where they are arranged in the form of a series of irregular parallelograms; dorsal surface of second joint sparsely clothed with stiff hairs; tips of claws black. Palpi long, very robust; reddish brown, lighter distally. Femur enlarging from base to apex, with a very robust spur-like process on its outer ventro-lateral surface near the distal extremity, the anterior edge of which is provided with a row of short, black tubercles; dorsal surface of femur with numerous scattered, short, black tubercles; and a few also on the proximal portion of the inner ventro-lateral surface; sparsely provided with spinous hairs. Patella short, thick, so united with the femur as to form an arch, with sparse hairs and a few scattered tubercles on its dorsal and outer lateral surfaces. Tibia arched, densely clothed with long black hairs; a patch of short black tubercles on the proximal portion of its ventral

surface, and a short row of similar tubercles on the apical portion of its inner ventro-lateral surface. Tarsal joint densely clothed with long black hairs, with a thick row of short black tubercles on its inner ventro-lateral surface, terminating in a short denticulate claw. Ventrum light reddish-brown. Coxæ reddish, with a few short hairs; two anterior pairs with a row of subobsolete tubercles on the cephalic border. Trochanters light brown, darker dorsally. Remaining joints of legs light brown with darker annuli; femora, patellæ, and tibiæ, with rows of short spines. Shaft of penis very robust, flattened, distally contracted and curved, and terminating in a short, acute point.

Described from four specimens collected in Champaign Co., Ill., 23d June and 9th August, 1887, and at Cave-in-Rock, Hardin Co., Ill., 27th July, 1883.

So far as I know, the female of this rare form has never been taken.

I refer this species, provisionally, to *Liobunum*, although, on account of the spur-like process on the femur of the palpus, it does not strictly belong there.

### L. (?) *formosum*, (Wood).

*Phalangium formosum*, Wood, l. c., p. 30.

♂, ♀. Body 4-6 mm. long, 2.5-3 mm. wide. Palpi 2.6 mm. long. Legs: I., 10 mm.; II., 22 mm.; III., 11 mm.; IV., 16 mm.

Dorsum remarkably smooth, mottled with gray and blackish brown; wide a dark brown or black central marking commences on the cephalic margin and runs to the middle of the fifth abdominal segment, where it abruptly terminates; it is expanded on the cephalothorax, contracted on the first abdominal segment, and then again expanded. The entire abdomen caudad of the middle of the fifth segment usually much lighter than the part cephalad. There is a peculiar oblique sinus caudad of each lateral pore. Eye eminence



LIOBUNUM (?) FORMOSUM



brownish, perfectly smooth, not at all canaliculate, almost hemispherical. Mandibles whitish, with the usual black tips to the claws; second article with sparse blackish hairs on dorsal surface. Palpi rather slender, mottled, distally whitish; furnished with short blackish hairs. Patella with its inner distal lateral angle prolonged into a short apophysis, and having a rather thin brush of hairs on its inner lateral surface. Tarsal claw denticulate. Ventrum, including coxæ, grayish brown, cephalic portion with short dark hairs. Trochanters brownish black. Legs light brown, ringed with dark brown; furnished with very minute blackish spines.

Described from many specimens collected in Champaign, Effingham, and McLean counties.

I refer this species to the genus *Liobunum*, for the present, with considerable hesitancy, as it does not strictly belong there on account of the projecting inner angle of the palpal patella. Its life history also is different from that of any other member of the family with which I am acquainted, as it lives over winter as an adult instead of depositing eggs and dying in autumn, as do the other species. I have collected it repeatedly under boards in fields during the months of September, October, November, January, April, and May.

#### PHALANGIUM, LINN. 1758.

Teguments soft or subcoriaceous. Striæ of the cephalothorax, and of the three last abdominal segments very distinct, those of the five cephalic segments only slightly so. Cephalic border of the cephalothorax smooth: lateral border more or less toothed; dorsum nearly always furnished with small teeth. Dorsum of abdomen having transverse series of small teeth or hairs. Eye eminence of medium size, canaliculate, provided with two series of pointed tubercles, always separated from the cephalic border by a space larger than its diameter. Lateral pores large, elongate-oval, sub-marginal, visible from above. Anal piece quite small, wider than long, of the same width, or scarcely narrower than the curved borders of the eighth segment. Mandibles short and simple in the female, often more developed and provided with tubercles in the male; first article unarmed below. Palpi simple, often having the inner distal



angle of the femur and of the patella very slightly produced, but never prolonged into a process; hairs equal, or sometimes thicker on the inner side, but not forming a brush; patella always shorter than tibia; maxillary lobe provided at the base with two conical tubercles. Maxillary lobe of the second pair of legs much longer than wide, gradually narrowing from the base to the extremity, directed obliquely forward and not meeting, anterior border straight. Pectus large, parallel between the coxæ, rounded in front or slightly lanceolate, more rarely enlarged and obtusely truncate. Feet long, more or less robust, tibiæ without false articulations. Claws of palpus simple.

**P. cinereum, Wood.**

*Phalangium cinereum*, Wood, Commun. Essex Institute, Vol. VI.,  
p. 25.

♂. Body 5-6 mm. long, 3 mm. wide. Palpi 4 mm. long. Legs: I., 21-32 mm.; II., 42-52 mm.; III., 23-33 mm.; IV., 32-43 mm.

Dorsum cinnamon-gray, with a slightly darker subobsolete, wide, vase-shaped, central marking; with transverse series of small spinose tubercles caudad of the eye eminence, and a curved series cephalad of it. These tubercles having whitish bases and acute black apices, and also generally having a spinous hair arising on one side of the tubercle near the apex of the white portion, and reaching beyond the tip of the tubercle. Cephalad of the eye eminence, there are also two longitudinal series of these tubercles of about three each. Lateral borders of cephalothorax sub-sinuate. Eye eminence low, canaliculate, with a series of five or six tubercles, like those on the dorsum, surmounting each eye. Mandibles brownish white, tips of claws black; second joint and apical portion of first joint furnished with short, black, stiff hairs. Palpi light brown, rather slender, first four joints with minute tubercles and short black hairs; none of the angles prolonged; tarsal joint without tubercles, but with hairs. Claw moderately robust. Ventrums (including coxæ), light grayish-brown, with many somewhat quadrangular patches of a more pronounced brown, and scattered blotches of chocolate-brown. Trochanters light brown, with many small tubercles. Remaining joints of legs cinnamon-brown, more or less annulated with darker and

lighter shades; angular, with longitudinal rows of black spines. Sheath of penis subcylindrical, truncate. Shaft robust, with two lateral oval openings near distal extremity, then contracted into a blunt scoop-shaped piece, turned upward at nearly a right angle, and terminating with a slender acute point.

In very small specimens of this species, as of many others of the group, the tubercles on the body and members are often partially wanting or replaced by hairs.

♀. Body 7.8 mm. long, 3.5 mm. wide. Palpi 4 mm. long. Legs: I., 20 mm.; II., 36 mm.; III., 20 mm.; IV., 28 mm.

Differs from ♂ as follows:

Dorsum darker gray, more mottled; central marking more distinct. Tubercles on eye eminence more numerous, and those forming the longitudinal series cephalad of the eye eminence also more numerous. Palpi with hairs, but without tubercles. Legs with annulations more distinct; trochanters without tubercles; spines on femur less prominent and on tibia obsolete. Narrow quadrangular brown patches on ventrum of abdomen arranged in transverse series. Distal joints of ovipositor black.

Described from many specimens collected in Champaign Co., Ill., during October, 1886, and August, 1887. I have also received a fine lot of this species from my brother, Mr. Howard E. Weed, collected at Lansing, Michigan, where it was very common during the autumn of 1886.

#### OLIGOLOPHUS, C. KOCH, 1872.

Teguments soft or subcoriaceous. Striæ of the cephalothorax and of the three last abdominal segments very clear, those of the first five segments only slightly distinct. Anterior border of the cephalothorax smooth, or provided at the middle with three small geminated points; lateral borders more or less spiny; dorsal surface of cephalothorax nearly always provided with small teeth. Abdomen presenting transverse series of small teeth or hairs. Eye eminence of medium size, as wide as long, or a little wider than long, lightly canaliculate, provided with two series of low tubercles, separated from the

anterior border by a space wider than (often nearly double) its diameter. Lateral pores large, oval, submarginal. Anal piece quite large, wider than long, at least as wide as the bent borders of the eighth segment, rounded before, its posterior border truncate and slightly curved. Mandibles quite short, and normal in both sexes; first article provided below at the base with a pointed tooth, slightly curved in front. Palpi, inner surface of the extremity of the femur, patella, and tibia thickly furnished with hairs forming a brush; upper internal angle of the femur and patella slightly projecting, rarely prolonged; patella slightly shorter than tibia, enlarged from the base to the extremity; maxillary lobe having at the base two conical tubercles. Maxillary lobe of the coxæ, and feet as in *Phalangium*.

*O. pictus*, (Wood).

*Phalangium pictum*, Wood, l. c., p. 30.

♂. Body 6 mm. long, 3.2 mm. wide. Palpi 4.1 mm. long. Legs: I., 10 mm.; II., 24 mm.; III., 12 mm.; IV., 17 mm.

Dorsum minutely scabrous, mottled ash-gray, much lighter in some specimens than others. Dark central marking generally very distinct, commencing at the cephalic border of the cephalothorax, the dorsal surface of which it almost covers, and suddenly contracting at its caudal margin, so that it starts on the



OLIGOLOPHUS PICTUS. ♂

abdomen as a narrow line, slightly wider than the eye eminence, then gradually expanding until it reaches the end of the cephalic third of the abdomen, where it suddenly contracts, its borders irregularly curving toward the dorso-meson, then expanding again,—though not becoming as wide as before,—and finally gradually contracting and running as a stripe to the anus, or, as in some specimens, simply terminating at the cephalic margin of the penultimate segment. Cephalic margin of cephalothorax nearly straight, lateral angles slightly produced, each having a black spine on an elevated base; three large brownish

black tooth-like processes just caudad of the middle of the margin, each terminating with a minute spine, the middle process being slightly cephalad of the others. Dorsad of these but cephalad of the eye eminence, there is a curved series of minute spines on whitish elevated bases, and caudad of the eye eminence on the cephalothorax there are two similar nearly transverse series. There is also a similar transverse series on each segment of the abdomen — most easily seen on the black central marking. Eye eminence large, brownish, canaliculate; each carina having four thick, brownish tubercles, each of which terminates in a black spine. Mandibles light brown, tips of claws black; dorsal surface of second joint and of apical portion of first joint furnished with short black hairs; second joint with a blunt tubercle on its inner dorso-lateral surface, just above the base of the finger forming part of the claw, and the apical portion of its outer lateral surface (caudad of the insertion of the thumb) prolonged into a tubercular process. Thumb with a prominent dorsal tubercle near its base. Palpi mottled; the outer ventro-lateral portion of the femur with an irregular row of long, slender, white tubercles, terminating with black spines; inner ventro-lateral surface with a series of long, black, curved, spinous hairs; inner lateral surface with similar shorter hairs more numerous, forming a brush on the slightly produced inner distal angle; dorsal and outer lateral surfaces with short spinous hairs. Patella nearly as long as tibia, its inner distal angle produced and furnished with a brush of black hairs with recurved tips; shorter hairs in distant rows on its dorsal and lateral surfaces. Tibia with its inner lateral distal angle slightly swollen, but not projecting forward as does that of the patella, but furnished with a similar brush of hairs; outer ventro-lateral surface with a subobsolete row of white tubercles, tipped with spinous hairs; dorsal and outer lateral surface furnished with sparse short hairs. Tarsus thickly covered with long black recurved hairs, usually with a row of subobsolete, short, black tubercles on its inner ventro-lateral surface, and terminating in a moderately robust simple claw. Ventrums light grayish-brown, hispid. Legs short, robust. Coxæ light gray, covered with spinous hairs on elevated bases. Trochanters light brown or grayish,

tuberculate. Remaining joints mottled with blackish brown and gray; all except tarsi with longitudinal rows of small black spines, and acute tubercles on their dorso-distal borders. Tibiæ angular. Tarsi hairy. Sheath of penis enlarged distally, truncate; shaft moderately robust, distally canaliculate, then expanded into a spoon-shaped portion, and terminating in a short, black, acute, articulated piece.

♀. Body 7 mm. long, 4.5 mm. wide. Palpi 4.3 mm. long. Ringed portion of ovipositor 4 mm. long. Legs: I., 11 mm.; II., 27 mm.; III., 13 mm.; IV., 20 mm.

Besides its larger size and more robust appearance, it differs from the male in having no tubercles on the mandibles; joints of ovipositor grayish.

Described from many specimens collected in Champaign Co., Ill., during September, October, and November, 1886.

## ADDENDA AND ERRATA.

To complete the list of species recognized by Stål as belonging to this family, the following are appended, not from the belief that they belong here, but because there should be no hasty change made in the classification of the Homoptera until they have been more carefully studied.\*

### SUBFAMILY CENTROTINÆ, STÅL.

#### LXVI. TOLANIA, STÅL.

276. *T. OPPONENS*, Walk.

1858. *Centrotus opponens*. Walk. List Hom. B. M. Suppl. 159.

1862. *Tolania opponens*. Stål. Öf. Vet.-Akad. Förh. 491.

Hab.—Mex. (Walker).

#### LXVII. † *ÆTHALION*, LATR.

277. *A. GRATUS*, Walk.

1858. *Æthalion gratum*. Walk. List Hom. B. M. Suppl. 169.

1864. *Æthalion dilatatum*. Stål, Hem. Mex. 73, 450.

1869. *Æthalion gratus*. Stål, Bid. Memb. Kän. 299, 14.

Hab.—Mex. (Walker).

278. *A. NERVOSO-PUNCTATUS*, Sign.

1851. *Æthalion nervoso-punctatum*. Sign. Ann. Ent. Soc. France, Sér. 2, ix, 679, 14, pl. 14, fig. 10.

1858. *Æthalion nervoso-punctatum*. Walk. List Hom. B. M. Suppl. 168.

1869. *Æthalion nervoso-punctatus*. Stål. Bid. Memb. Kän. 299, 12.

Hab.—Mex. (Walker).

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\*None of the species mentioned here have a prolongation of the prothorax backward, and they rightfully belong with the Jassidæ.

† There are 68 instead of 67 genera represented in this catalogue, and 282 species instead of 278, XIV., 41, 42, 43, and 44 being duplicated.



The following additional localities have been obtained since this catalogue was put in the printer's hands:

For numbers 7, 8, 140, 177, 203, 204, 205, 206, 211, and *Aconophora lanceolata*, Fairm., Guatemala (*Henshaw*); 14, 27, and 142, Me. and Mass. (*Henshaw*); 15, Ia. (*Osborn*), N. Y. (*Van Duzee*); 19, Mich. (*Cook*), Pa. (*Rathvon*), Me. (*Henshaw*); 21, N. Y. (*Lintner*); 14, 19, 22, 27, 28, 41, 53, 65, 71, 76, 85, 96, 107, 131, 216, 223, 261, Neb. (*Barber*); 28, Mich. (*Cook*), Me., Fla., Tex., Calif., and B. C. (*Henshaw*); 34, 44, 66, 91, 116, 122, 132, and 145, Mich. (*Cook*); 41, B. C. (*Henshaw*), Nev. (*Hillman*); 43, Miss. (*Weed*), Mich. (*Cook*); 46, Mass. (*Henshaw*), Mich. (*Cook*); 52, Mich. (*Cook*), Ia. (*Osborn*), Va. and Md. (*Henshaw*); 55, Mich. (*Cook*), Pa. (*Rathvon*), Ia. ? (*Osborn*), Me. (*Henshaw*); 57, Ill. (*Goding*); 65, 68, 75 (recorded as *jugata* Uhler, which is a MS. name), 131, and 261, Ia. (*Osborn*); 67, Mich. (*Cook*), Mass. and Me. (*Henshaw*); 72, Mass. (*Henshaw*); 73, 83, and 85, Ia. ? (*Osborn*); 86, Mass. and Pa. (*Henshaw*); 95, Pa. (*Rathvon*); 97, and 119, Ia. (*Osborn*), Mich. (*Cook*); 114, Mich. (*Cook*), Tex. (*Henshaw*); 121, Pa. (*Henshaw*); 136, and 192, Va. (*Henshaw*); 137, N. Mex. (*Townsend*), Col. (*Gillette*); 138, Col. (*Goding*); 188, Va., Tex., and Vict. (*Henshaw*); 194, Mass., Tex., Calif., Vict. (*Henshaw*); 198, Cent. Am. (*Henshaw*); 217, Me. (*Henshaw*); 223, Mich. (*Cook*), Anticosti, Mass., Pa., Md., Va., D. C., Oregon, and Wash. (*Henshaw*); 248, Tex. (*Henshaw*).

Page 391, line 19, for *Entomolgique* read *Entomologique*.

Page 393, for No. 5 substitute as follows: \*

P. DISPAR, Fabr.

1803. *Darnis dispar*. Fabr. Syst. Rhyng. 32, 23.

1836. *Entylia dispar*. Burm. Silb. Rev. iv, 182, 2.

1869. *Parmula dispar*. Stål, Hem. Fabr. ii, 29, 1.

*Hab.*—Mexico (*Goding*).

Page 397, between lines 12 and 13 from bottom insert as follows: 1893. *Entilia sinuata*. Rice, Insect Life, v, 243.

Page 399, line 7, after "one" insert *female*.

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\* *P. munda*, Walk, belongs to *Phanusa* (*Fide Fowler*)

Page 400, between lines 9 and 10 insert as follows: 1851. *Cyphonia rectispina*. Walk. List Hom. B. M. 597, 6; line 19, for *postfasciata* read *postfasciata*.

Page 401, line 4, for *bubalus* read *diceros*.

Page 402, at bottom of page add as follows:

1891. *Ceresa bubalus*. Fletcher, Rep. Ent. and Bot. Can. 191.

1892. *Ceresa bubalus*. Osb. Trans. Ia. Hort. Soc. 119, fig. 30.

1893. *Ceresa bubalus*. Osb. Fruit and Forest Tree Ins. 24, fig. 30.

Page 403, line 21, for the interrogation point substitute a period; between lines 2 and 3 from bottom insert as follows:

1892. *Ceresa taurina*. Osb. Trans. Ia. Hort. Soc. 119.

1893. *Ceresa taurina*. Osb. Fruit and Forest Tree Ins. 24.

Page 409, between lines 4 and 5 from bottom insert as follows: *Stictocephala gillettei*, ♂. Godg. Ent. News, iii, 200.

Page 411, line 2, for *nigripes*, Stål, read *munda*, Walk.; between lines 2 and 3 insert as follows: 1858. *Parmula munda*. Walk. List Hom. B. M. Suppl. 152; line 4, for Mex. (Stål), read Mex. and Guatemala (Walk.).

Page 412, between lines 11 and 12 from bottom insert as follows:

1892. *Thelia cratægi*. Osb. Trans. Ia. Hort. Soc. 119.

1893. *Thelia cratægi*. Osb. Fruit and Forest Tree Ins. 24.

Page 413, line 12 from bottom, and page 414, line 1, for *acuminata* read *acuminatus*.

Page 414, line 11, for *Hyphinae* read *Hyphinoë*.

Page 416, line 3 from bottom, for *Telamona* read *Membracis*.

Page 417, line 1, for 1841 read 1851.

Page 422, between lines 8 and 9 insert as follows: 1892. *Telamona mexicana*? Godg. Ent. News, iii, 108.

Page 424, line 9, for *top* read *tips*.

Page 425, line 6, dele "fig."; line 2 from bottom, for *galata* read *galeata*.

Page 427, line 4 from bottom, for *Membracis* read *Acutalis*.

Page 429, line 15, after "lower" insert *edge*.

Pages 435 and 436. *Note*.—An examination of the types shows that numbers 122 to 126 belong to *Cyrtolobus*.

Page 437. After the numbers 128, 129, and 130, for *A.* read *E.* \*

Page 441, line 17 from bottom, for *V.* read *Amastris* †; line 4 from bottom, insert (?) before *V.*

Page 442, between lines 8 and 9 insert as follows: 1851. *Thelia expansa*. Walk. List. Hom. B. M. 563, 26; between lines 14 and 15 from bottom, insert as follows: *Thelia marmorata*. Walk. List. Hom. B. M. 555, 4.

Page 444, line 15 from bottom, after "scar" insert as follows: Apical cell much longer than in *marmorata*, the length exceeding the breadth more than twice, while in *marmorata* the cell is but a little longer than broad; line 14 from bottom, after "fuliginous" and "yellow" substitute semicolons for commas; line 7 from bottom, after "process," add as follows: in not being suddenly depressed a short distance before apex, in not having the median carina flat from this depression, and in being much more depressed anteriorly.

Page 445, line 8. *Note*.—Through the kindness of Rev. W. W. Fowler, of Lincoln, England, I have had the opportunity to examine Stål's type of the genus *Optilete*, and, as surmised, it proves to be a typical *marmorata*, Say. Between lines 16 and 17 from bottom insert as follows: 1851. *Hemiptycha longicornis*. Walk. List Hom. B. M. 569, 7.

Page 449, line 10 from bottom, *Note*.—Walker's *Darnis lineola* belongs to *Phacusa* (*Fide* Fowler).

Page 452, No. 181, for *prunitia*, Butler, read *hastata*, Stål (*Fide* Fowler).

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\* *Ashmeadea* being preoccupied, the name was changed to *Evashmeadea*.

† A more careful study of the species places it in *Amastris*.